

WHAT IS CLAIMED IS:

1. A programmable photo-coupler-isolated wide band modulator for high voltage power supply, comprising:
 - a low voltage power supply unit providing at least one low voltage;
 - 5 an frequency converter unit for receiving the low voltage and converting it into a high frequency low AC voltage;
 - a high voltage module for receiving the AC voltage and increasing the AC voltage; and
 - a wide band modulation module coupled to the high voltage module for
- 10 converting the AC voltage into a DC voltage and receiving an external modulated signal, the modulated signal being activated to switch the DC voltage for generating and outputting a wide band modulated DC voltage.
2. The power supply as claimed in claim 1, wherein the high voltage module comprises a high voltage switch assembly for outputting either a
- 15 single or a double polarity output.
3. The power supply as claimed in claim 2, wherein the high voltage switch assembly comprises a plurality of high voltage switches.
4. The power supply as claimed in claim 3, wherein the high voltage switch is a transistor.
- 20 5. The power supply as claimed in claim 1, wherein the wide band modulation module comprises a transformer isolator circuit and a photo-coupler-isolated circuit coupled to the transformer isolator and the high voltage switch assembly respectively.
6. The power supply as claimed in claim 5, wherein the

photo-coupler-isolated circuit is capable of receiving the modulated signal and switching each of the high voltage switches as enabled by the modulated signal.

7. The power supply as claimed in claim 1, wherein the wide band modulation module comprises a transformer isolator circuit for isolating a low voltage input side from a high voltage output side and a photo-coupler-isolated circuit.
8. The power supply as claimed in claim 7, wherein the photo-coupler-isolated circuit comprises a plurality of optical couplers for receiving the modulated signal.
9. The power supply as claimed in claim 1, further comprising a computer for generating a modulated signal and displaying the same.
10. The power supply as claimed in claim 1, wherein the high voltage module increases the AC voltage for supplying a voltage from 0V to 50KV.
11. The power supply as claimed in claim 1, wherein the wide band modulated DC voltage is obtained at a frequency about 100KHz.